Amendment to the Specification:

1. Please insert the following paragraphs immediately after paragraph [0029]:

Embodiments of the present invention employ various mechanisms to detect the onset and/or presence of ventricular collapse based on the processing and/or analysis of certain inherent pump system parameters (e.g. flow, current, speed, etc.). These analysis techniques are performed in the time domain and frequency domain. Time domain mechanisms include correlation techniques as well as linear and non-linear signal processing. Frequency domain mechanisms include various real-time spectral analysis methods using Fourier Transforms such as the Fast Fourier Transform ("FFT") and the Discrete Fourier Transform ("DFT"), as well as other linear and non-linear signal processing techniques.

In the time domain, a physiologically appropriate flow(t) waveform is assumed to be quasi-sinusoidal at a single frequency proportional to the patient's native heart rate (i.e. fundamental frequency). In the frequency domain, the corresponding physiologically appropriate flow(f) waveform will be a single narrow spectral peak at the same single frequency proportional to the patient's native heart rate. As the flow(t) waveform becomes more distorted (i.e. deviates from a perfect sinusoid), the flow(f) waveform will contain additional spectral peaks corresponding to flow contributions at varying frequencies.

The Fourier Series may be used to compute the fundamental and harmonic components from time domain signals that are continuous and periodic. Many

invivo waveforms that may denote suction, however, are not periodic, and further, the frequency components of such waveforms may not be harmonically related to the fundamental frequency. In accordance with aspects of the present invention, many frequency components, both harmonically related and not, about the fundamental are analyzed to precisely detect suction.